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# What Is This Fuss About General Science?

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With the advent of the superb Biological Sciences Curriculum Study (BSCS), Physical Sciences Study Committee (PSSC), Chemical Education Material Study (CHEM Study), and the Chemical Bond Approach (CBA) courses, secondary science teachers, at last, spend more of their efforts teaching instead of hacking up mediocre, out-dated texts and scrambling for up-to-date "supplementary" material that should have been the meat of the original "text". The campfires of the anti-textbook "religions" are slowly going out one by one. It is clearer now that many members of the "anti-textbook religions" were (at heart) really advocates of superior textbooks which at the time of the anti-textbook furor, did not yet exist.

One reason for the success of BSCS, PSSC, CHEM Study, and CBA, is up-to-date, well written texts. A common vital element of all, is the unity of thought which binds the laboratory investigations to modern ideas discussed in the corresponding text material. These are a few of the reasons that enthusiasm, scientific freedom of thought, and conten carry so well from the teachers to the students. Rather than shrugging their shoulders and asking, "This is science?", the students respectfully realize that, "This is science!"

There are campfires remaining in the distance which have not gone out yet, but seem to be getting brighter. One camp is of the "religion" called general science. Implications of this name alone are tremendous indeed. General science could be a smattering of many fields of science, or the fundamentals of each of the sciences "bonded uniformly together". One cry of the advocates of general science courses is, "Down with compartmentalized courses!" Some advocates argue that up-dating general science is the answer. Another point they make is that we need a course for the "low ability students" as well as for the "average" and "high ability students", and that these low achievers can fit into a general science curriculum best.

Taking these views one by one, it immediately seems advantageous to have a course that can bind chemistry, physics, biology, and all of the other sciences into one interesting course. But, since there is not time enough to begin investigation of three or more fields of science very thoroughly, ground must be given for the sake of generalities. Instead, a selection of details at the cost of generalities, or any combination of these generalities and details could be presented. However, unless organized on a "higher" level, this course would be at best a hodge-podge of interesting facts and understandings selected at random. This would usually mean repetition in science content from elementary grades to senior high school. This has been called the spiral approach. The sad fact is, however, that such an approach can end up as nothing but a broken spiral, and possibly a badly scattered one at that. There are few science teaching approaches less bonding than weak general science subject matter repeated from elementary to junior or senior high school.

As far as compartmentalization goes, this accusing label cannot intelligently be placed upon either the PSSC, CHEM Study, CBA, or BSCS curricula. The blue version BSCS (biology) approach for example, is quite dependent upon a knowledge of chemistry and some physics, while the PSSC (physics) course is a next logical step after one of the fine chemistry approaches. About the

only "compartmentalization" that this sequence could be accused of is exemplified by the following: It is difficult to study the green light coming from a living leaf if at the same time one must investigate the structure of the proteins, while contemplating the importance of photosynthesis in starch synthesis.

On the contrary, if it is a general understanding and knowledge of science that the students should attain, then only after at least three such strong courses in chemistry, physics and biology do they begin to get such a general "togetherness" type of thinking about the vast area of science. Only after such a background do the students appreciate the real dependence of the various "disciplines" of science upon one another.

Up-date general science? With the gargantuan growth of science research and facts, a general science course is more of an impossibility than ever before. Can it possibly be that some Evil Genius is systematically befuddling over-worked science teachers into believing that fifty or so college semester hours distributed in any manner whatsoever in general science (that is to say, botany, chemistry, geology, astronomy, physics, and zoology, plus other areas) can possibly be "preparation" enough for general science when a minimum of thirty hours should be the teacher's background in each area of general science alone? Only team teaching or else a teacher with about two hundred appropriately distributed hours could come close to filling this requirement!

The modern approaches fulfill the needs of low achievers only a small measure better than traditional general sciences courses. Slight advantages of the modern approach (for low achievers) over the traditional general science is due to the secure unity between content and laboratory investigation. Low achievers are often attracted by "things to work with" regularly in class, even though the content of the course is admittedly of a higher level than general science. Some low achievers, for example, are quite conciencious in writing laboratory reports, as well as actually working with their classmates in the laboratory.

It seemed originally that the log that kept the general science campfire burning was the "low achiever argument". But through the smoke and fuss, it is faintly clear now that this argument is all wet. Although "acceptable" general science courses must be present somewhere, too often they are bogus courses trumped up so that the low students can avoid taking a real science course, but yet get credit for science in a "half-try" course where they will be "given a D".

Let us hope that too much smoke doesn't spread around, and that the wet log does its job.

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found an exciting new science book?

revised the science curriculum in your school?

discovered a successful way to handle laboratory reports?

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